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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,566	07/30/2003	Nicolaas Joost Lopes Cardozo	2005-1017	6449

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EXAMINER	
DHINGRA, RAKESH KUMAR	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 07/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,566	LOPES CARDOZO ET AL.	
	Examiner	Art Unit	
	Rakesh K. Dhingra	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in The Netherlands on 7/30/2002.

It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because of the following:

1) Claim 1, line 8 reads "at least one cascade plate" whereas line 12 of the claim reads "the corresponding openings of successive cascade plates are mutually aligned". For the purpose of prosecution examiner presumes and interprets in line 8 of the claim - "at least two cascade plates" instead of "at least one cascade plate".

2) Claim1, line 11 – For the purpose of prosecution Examiner presumes and interprets the phrase "a number of passage openings" to be "at least two passage openings", when read in conjunction with Claim 2.

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4, 5, 7, 8 are rejected under 35 U.S.C 103(a) being unpatentable over Schram et al (EP Pub. No. 0 297 637 A1) in view of Maishev et al (US Patent No. 6,236,163).

Schram et al teach a plasma apparatus (Figures 1, 2) for treating substrate surface, comprising a treatment chamber 3 for receiving the substrate 9 therein, at least one plasma source 13 for generating a plasma, which plasma source is connected to the treatment chamber, and comprising inlet means (gas inlets 11 and 12) for admitting at least one reactant into a flow path of the plasma, wherein the plasma source comprises at least one cathode 20 (cathode tip) and at least one anode 5 between which a system of cascade plates 25 is received, which at least one cascade plate is provided with an opening 85 for passage of the plasma 8, wherein corresponding openings of successive

cascade plates are substantially mutually aligned, and that between the at least one cathode 20 and the system of cascade plates 25 there is a plasma space present, which is in open communication with the passage openings in the least one cascade plate of the system.

Schram et al do not teach plurality of passage openings in cascade plate.

Maishev et al teach an apparatus 200 (Figure 5) comprising, two or more concentrically arranged ring shaped ion beam sources ICH1 and ICH2 and a plurality of concentric emitting slits 252a in that these slits emit a plurality of concentric ion beams which overlap on the surface being treated and ensure uniform treatment on a large surface area (Column 7, lines 25-40 and Column 8, lines 19-25).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use plurality of plasma sources as taught by Maishev et al in the apparatus of Schram et al in order to obtain uniform surface treatment on a large surface area.

Regarding Claims 3, 8: Maishev et al teach that three or more ion beam sources can be used in a single multiple beam assembly (Column 13, lines 1-5).

Regarding Claim 4: Schram et al teach (Figure 3) that the gas inlet means are adapted to admit the reactant, on a side of the adjacent cascade plate 80 remote from the plasma space, into flow path 95 of the plasma extending through the openings.

Regarding Claim 5: Schram et al teach that less than one cathode 20 is provided per passage opening 85 in the adjacent cascade plate (Figure 2 and Column 6, lines 50-55).

Regarding Claim 7: Schram et al teach all limitations of the claim except for cascade plate with plurality of passages.

Maishev et al teach an apparatus 200 (Figure 5) comprising, two or more concentrically arranged ring shaped ion beam sources ICH1 and ICH2 and a plurality of concentric emitting slits 252a in that these slits emit a plurality of concentric ion beams which overlap on the surface being treated and ensure uniform treatment on a large surface area (Column 7, lines 25-40 and Column 8, lines 19-25).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use plurality of plasma sources as taught by Maishev et al in the apparatus of Schram et al to obtain uniform surface treatment on a large surface area.

Claim 2 is rejected under 35 U.S.C 103(a) being unpatentable over Schram et al (EP Pub. No. 0 297 637 A1) in view of Maishev et al (US Patent No. 6,236,163) as applied to claim 1 and further in view of Yang et al (US Patent No. 6,397,776).

Regarding Claim 2: Schram et al in view of Maishev et al teach all limitations of the claim except distance between passage openings.

Yang et al teach an apparatus (Figures 1, 4) using plurality of plasma generating means 15 (cathode 413, anode 419, gas supply means 417) to efficiently coat large substrates with good uniformity. Yang et al teach that spacing of plasma generating means has an effect on uniformity of coating and is preferred to provide spacing such that there is overlap between edge portions of the plurality of plasma plumes (Column 6, lines 22-35). Yang et al further teach that optimum spacing for plasma generation means would depend upon process parameters and can be determined by simple experimentation.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use optimum distance as per process parameters as taught by Yang et al in

the apparatus of Schram et al in view of Maishev et al to obtain uniform surface treatment on a large surface area.

Claim 6 is rejected under 35 U.S.C 103(a) being unpatentable over Schram et al (EP Pub. No. 0 297 637 A1) in view of Maishev et al (US Patent No. 6,236,163) as applied to claim 1 and further in view of Schaepkens (US patent No. 6,681,716).

Regarding Claim 6: Schram et al in view of Maishev et al teach all limitations of the claim except that one cathode is provided per passage opening.

Schaepkens teaches a multiple plasma source apparatus (Figures1a) for depositing large area coatings on substrates. Schaepkens further teaches that each plasma source 212 includes a cathode 214, an anode 216 and a gas inlet 218 which are disposed in a plasma chamber 202 in order to obtain uniform coating on large areas (Column 2, lines 38-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use one cathode per passage opening (for each plasma source) as taught by Schaepkens in the apparatus of Schram et al in view of Maishev et al to deposit large area coatings.

Claim 9 is rejected under 35 U.S.C 103(a) being unpatentable over Schram et al (EP Pub. No. 0 297 637 A1) in view of Maishev et al (US Patent No. 6,236,163) and Yang et al (US Patent No. 6,397,776) as applied to claim 2 and further in view of Schaepkens (US patent No. 6,681,716).

Regarding Claim 9: Schram et al in view of Maishev et al and Yang et al teach all limitations of the claim except that one cathode is provided per passage opening.

Schaepkens teaches a multiple plasma source apparatus (Figures1a) for depositing large area coatings on substrates. Schaepkens further teaches that each plasma source 212 includes a cathode 214, an anode 216 and a gas inlet 218 which are disposed in a plasma chamber 202 in order to obtain uniform coating on large areas (Column 2, lines 38-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use one cathode per passage opening (for each plasma source) as taught by Schaepkens in the apparatus of Schram et al in view of Maishev et al to deposit large area coatings.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schuurmans et al (US Patent No. 5,120,568) teach an apparatus (Figures 1, 2) for plasma surface treating of substrate 8 that uses cathodes 20, anode 5 and cascade plates 26.

Kim et al (US patent No. 6,632,323) teach an apparatus (Figure 1C) for treating a substrate using capillary discharge plasma for treating bigger workpiece 14 having at least one pin electrode 11, a dielectric body 12, capillary 13 and a counter electrode 15.

Landes et al (US patent No. 5,944,901) teach an apparatus (Figure 1) for treating surfaces by providing a very stable electric discharge using cascade plates 1a-1i, cathode 9, and anode 10 and plasma channel 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rakesh K Dhingra

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